



Armed Forces College of Medicine

AFCM





Transplantation Immunology (2)

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INTENDED LEARNING OBJECTIVES (ILO)



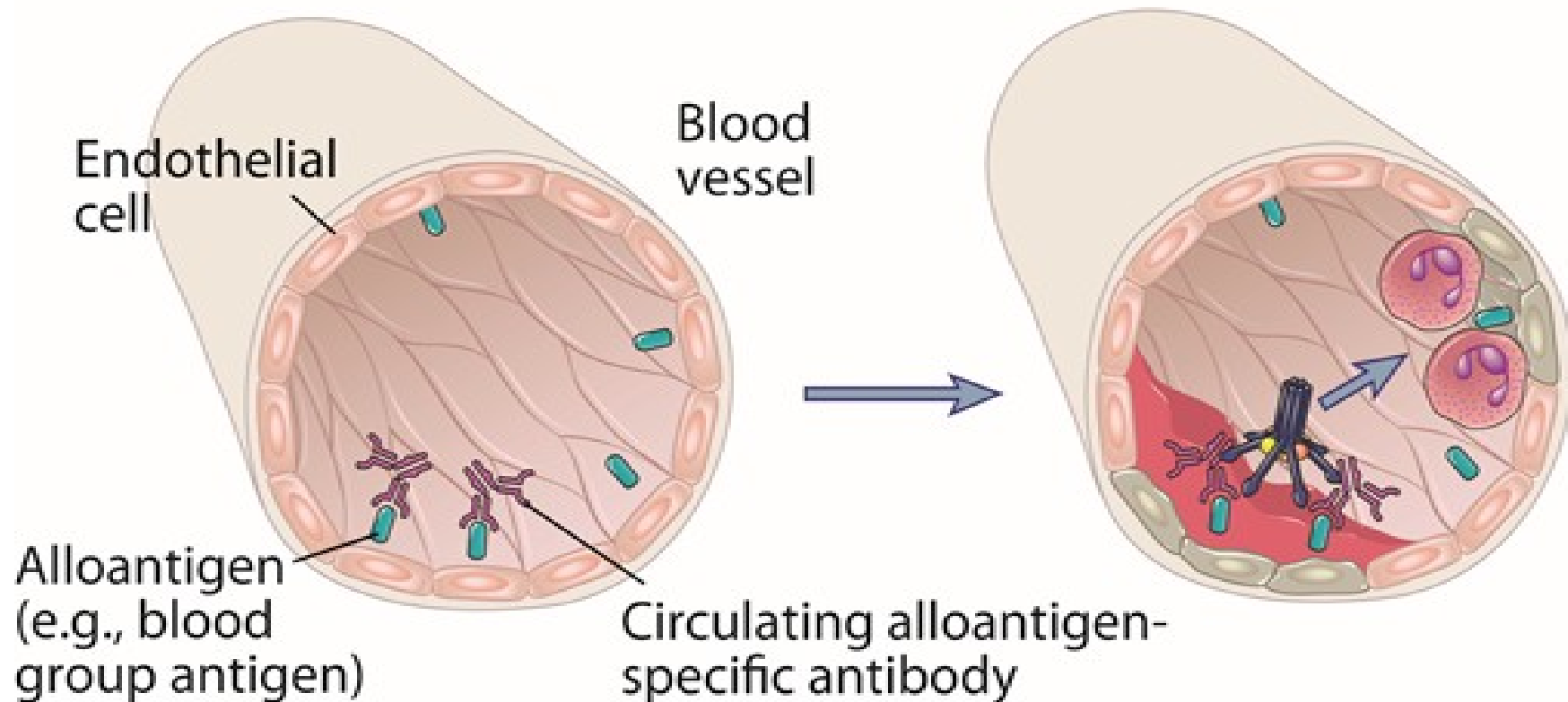
- **By the end of this session the student will be able to:**
 - 1.Explain the underlying mechanisms of each type of rejection**
 - 2.Define the immunosuppressive agents used in transplantation**
 - 3.Describe the main idea of HLA typing procedures**





Hyperacute graft rejection

Hyperacute rejection



**Complement
activation,
endothelial
damage,
inflammation
and thrombosis**





Hyperacute graft rejection

Etiology: Preexisting recipient Abs against **Donor HLA Ags**
due to previous: i. Transplantation
ii. Blood transfusion

Mismatched ABO Ags

Mechanism: Abs damage graft cells
expressing allogenic MHC by : (Type II) + Activation of complement



Recruitment of neutrophils & lysis by MAC

- ADCC by MQ , neutrophils & NK
- Inflammatory reactions with
- Prevent graft vascularization

Prevention:

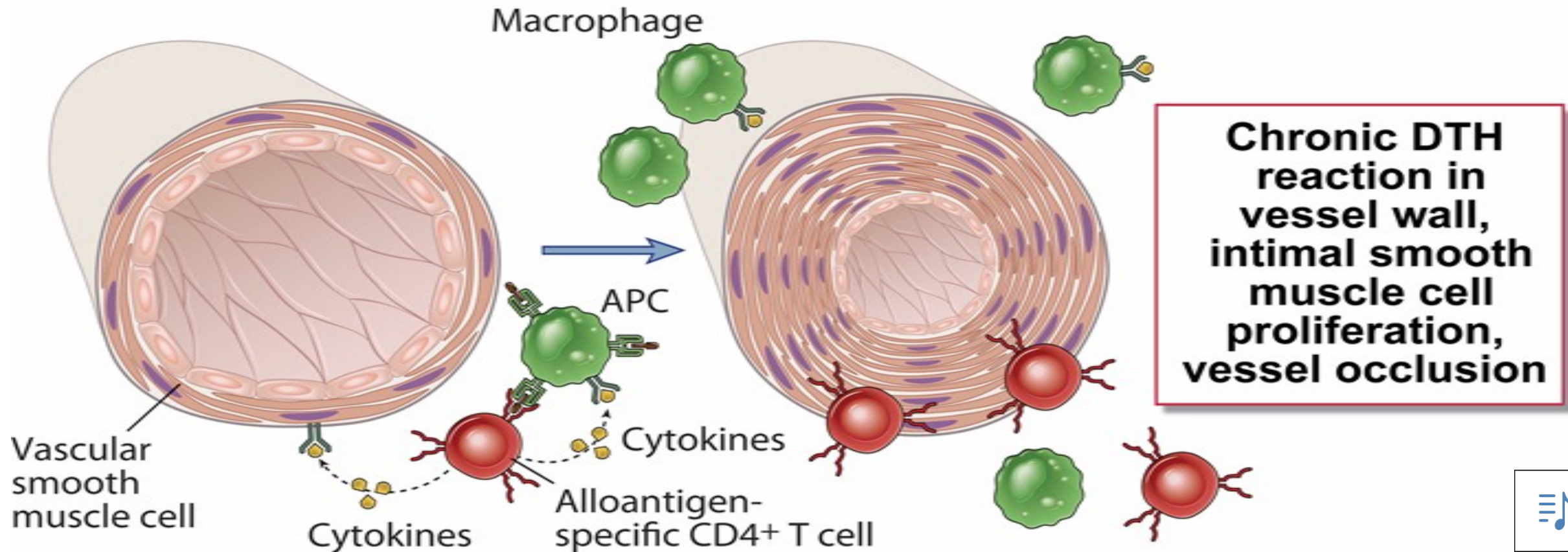
Cross match to detect preformed Abs



Chronic graft rejection



Chronic rejection



Chronic graft rejection



Change in vessel wall resulting from :

- ✓ **Chronic delayed hypersensitivity of host lymphocytes to allo-Ags in donor vessel wall**





Management of Transplantation



Preparation of the patient:
Treatment of hypertension & infection



Proper selection of the donor



**Immuno-
suppressive drugs**





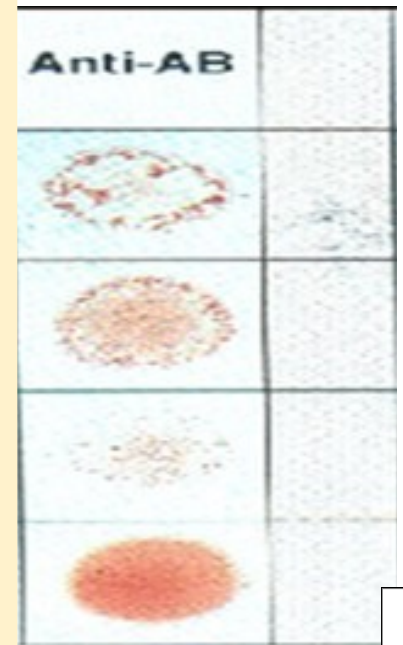
Proper selection of the donor

**Natural IgM Abs for
allogenic ABO Ags will
cause hyperacute**

**No graft survival if
there is
ABO incompatibility
between donor &**

ABO typing	Hyperacute rejection	Mediators of hyperacute rejection	Prevention of preformed Abs
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Antigen (on RBC)	Antigen A
Antibody (in plasma)	Anti-B Antibody
Blood Type	Type A Cannot have AB blood Can have A or O blood



HLA Typing



Micro lymphocytotoxicity

Aim: 1. Detect type of HLA :

A, B, C, DR

&DQ

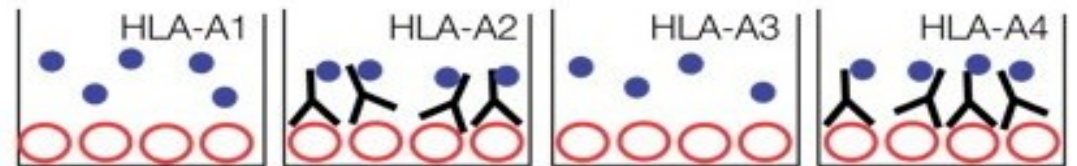
2. Done to the recipient,
then to possible donors

Choose the closest

+ antibodies



+ C'



+ vital dye

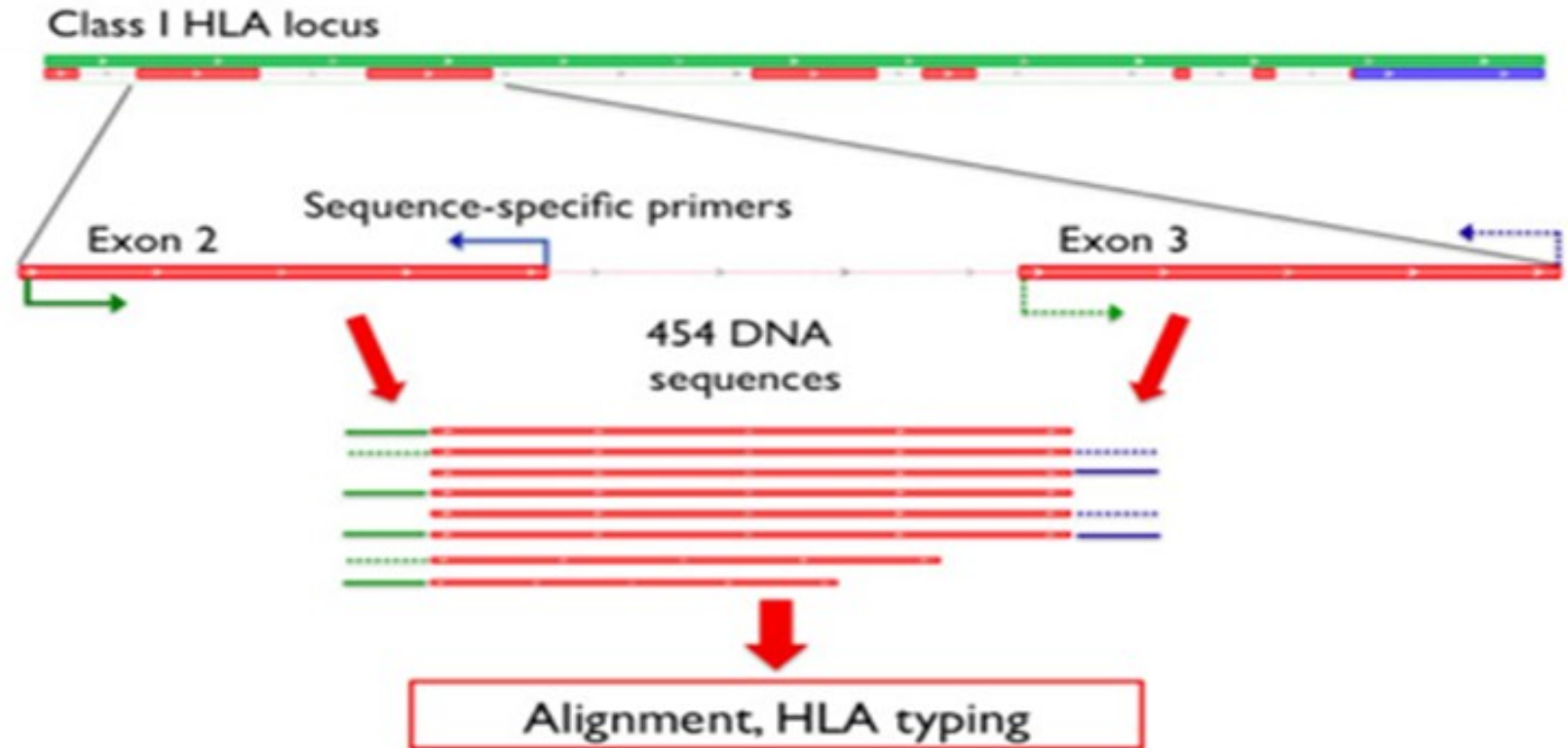




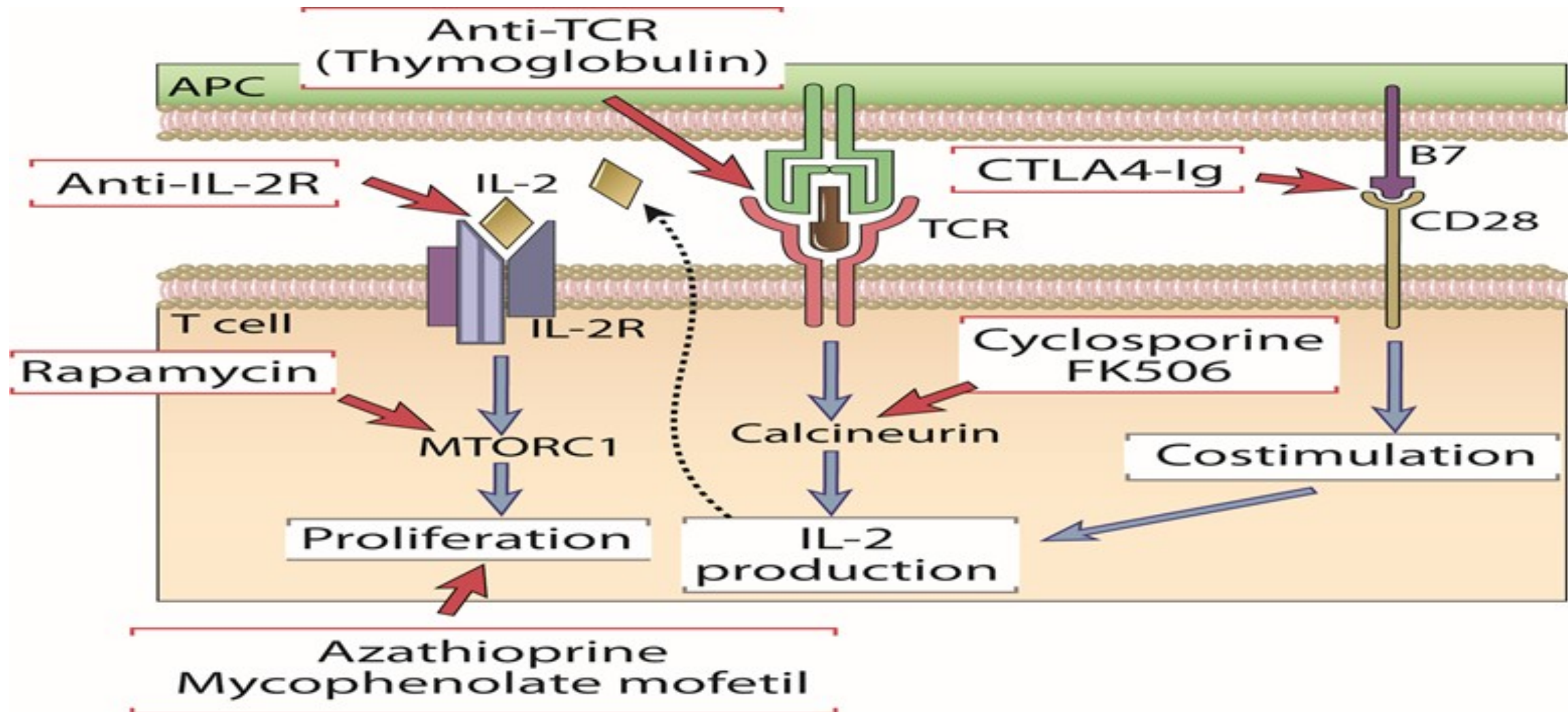
HLA Typing

PCR (Molecular Typing)

Detect MHC genotype
Amplify DNA segment coding
for polymorphic region of
class I & II mol.
Determine nucleotide
sequence
Predict a.a.sequence in MHC
Ags



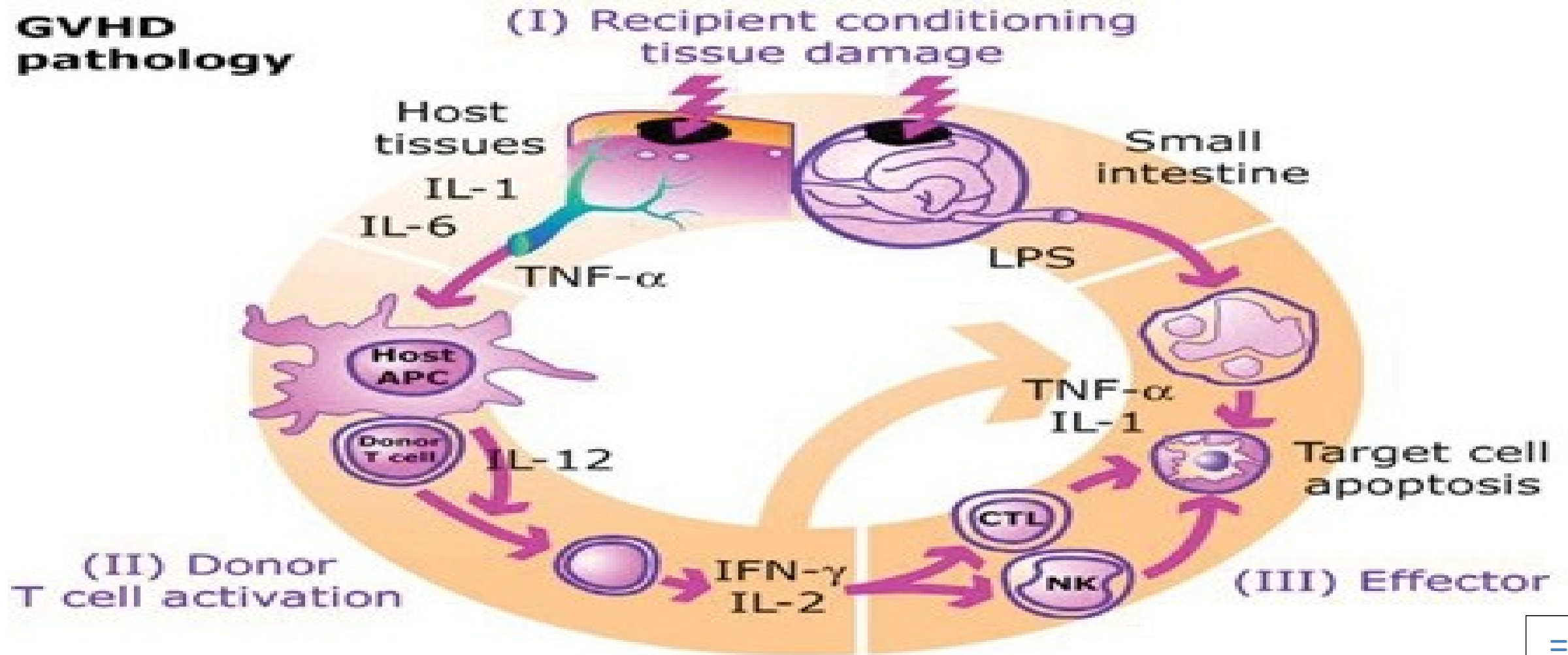
Immunosuppressive agents



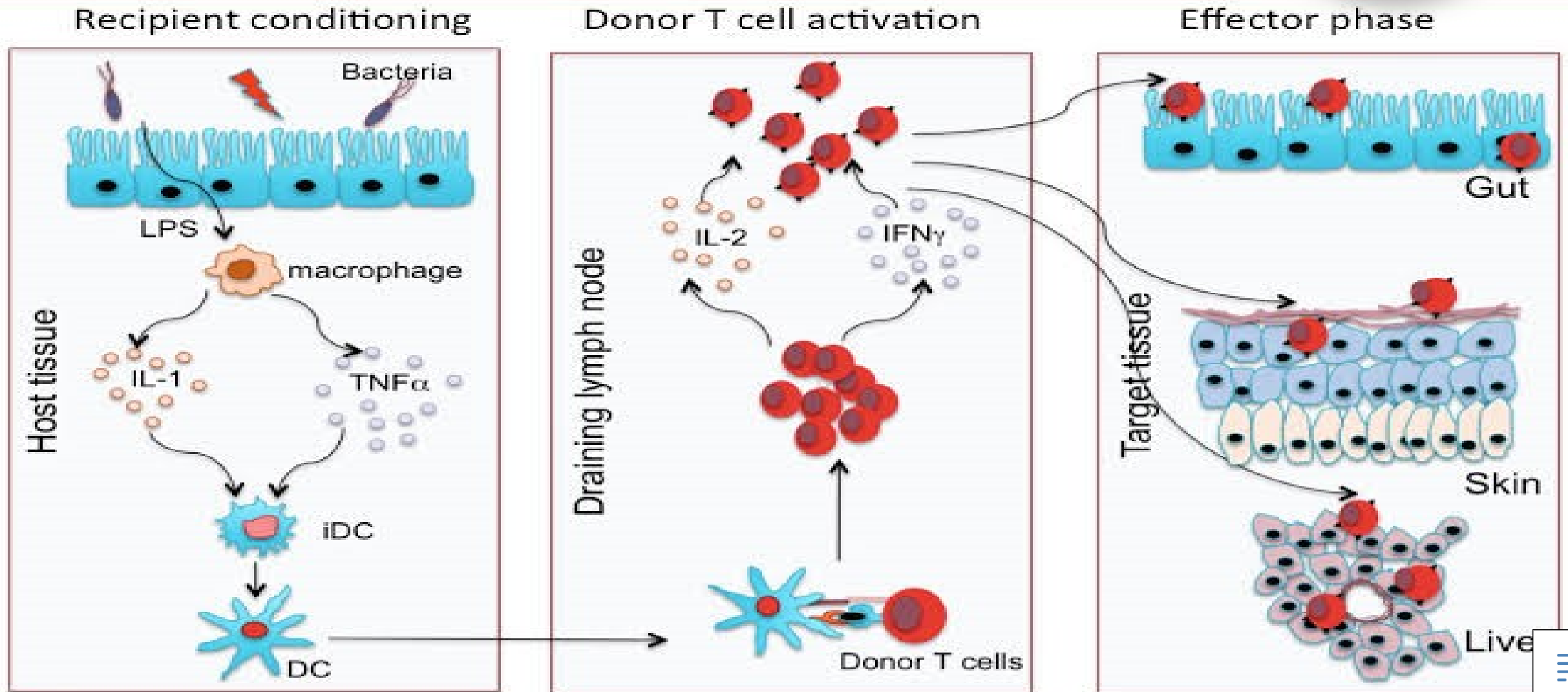
Graft Versus Host Rejection (GVHD)



GVHD pathology



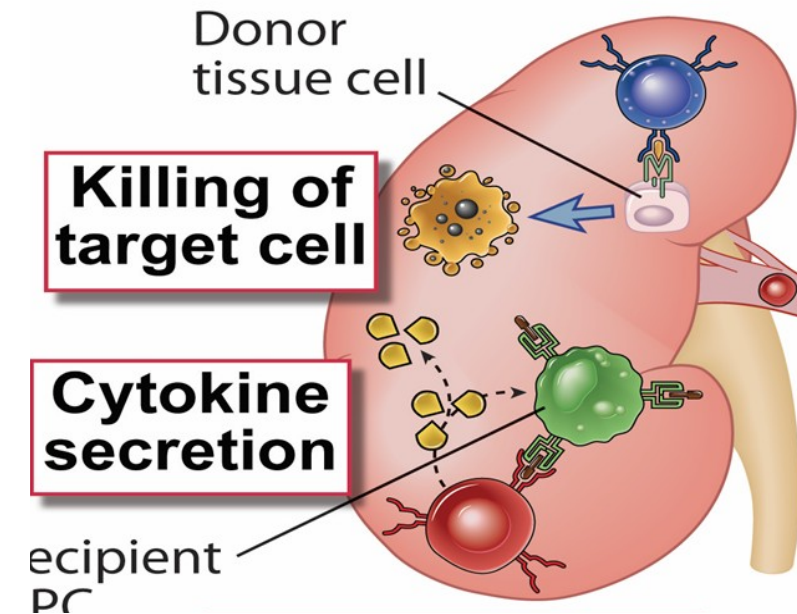
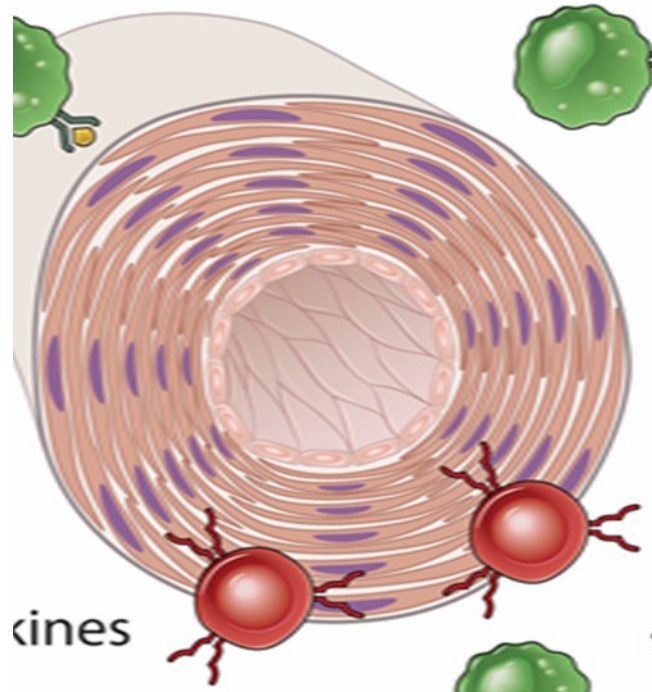
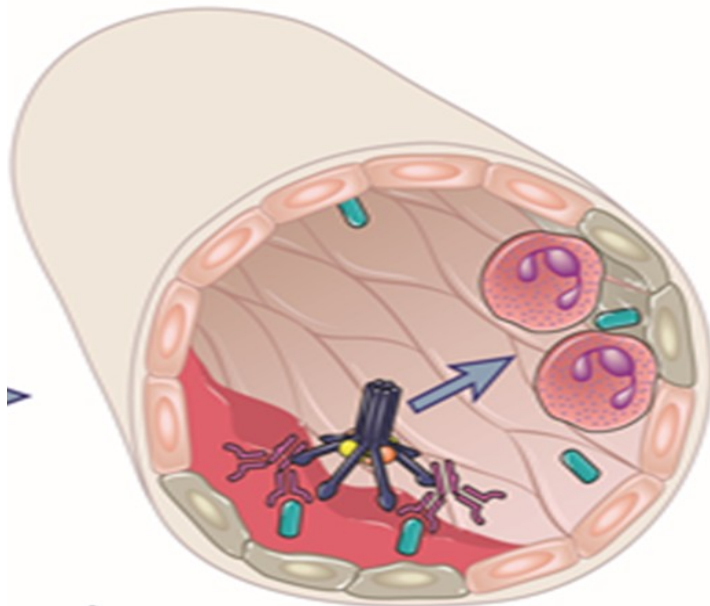
Graft Versus Host Rejection (GVHD)



Quiz



Play time: Let's find out which type of rejection



Hyper acute

Acute

Chronic



Suggested Textbooks



- 1. Review of Medical Microbiology and Immunology, Warren Levinson Chapter 62
p. 1150: 1162***
- 2. Cellular and molecular Immunology , Abul Abbas & Lichtmann, 2015, Chapter 117
p.359:382***



THANK
YOU

